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ABSTRACT

A set of dimensions for describing teacher discussion style is presented in this paper written in 1963. In the task dimension, teacher style is defined in terms of statement posture (positive or negative assertion), discussion posture (teacher's attitude toward information, e.g., descriptive, analytic), statement types (value judgments or factual claims about reality), and logical or intellectual operations. The social-emotional dimension includes the interpersonal affect. Procedural dimensions include efforts to control the interaction situation, e.g., task-oriented procedural acts, deviance control. To describe teacher behavior, the authors recommend first defining styles according to certain conceptual dimensions, training teachers to "play" these styles, and observing what differences occur in student behavior and learning outcomes. They illustrate this approach by describing two style models--recitation teaching and socratic teaching--and then defining some of the similarities and differences between the two styles according to the dimensions in their model. The paper concludes with a discussion of the utility of a dimensional analysis of teacher or discussion style. (RM)

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THE DEVELOPMENT OF A MULTIDIMENSIONAL OBSERVATIONAL SYSTEM FOR THE ANALYSIS OF PUPIL-TEACHER INTERACTION

Donald W. Oliver and James P. Shaver

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(Session 61)

THE DEVELOPMENT OF A MULTIDIMENTIONAL OBSERVATIONAL SYSTEM FOR THE ANALYSIS OF PUPIL-TEACHER INTERACTION*

Donald W. Oliver and James P. Shaver

One of the great challenges still before us in educational research is an "adequate" description of the student-teacher dialogue. By "adequate" we mean that it would allow us to describe important relationships between categories of teaching behavior and student learning. The response to this challenge undoubtedly must come in bits and pieces, and will require a great deal of systematic investigation. For the interaction process in its multitude of teaching contexts probably at least equals the complexity of the atom. It is for this reason that we think that continued efforts to deal with the dialogue in gross unidimensional terms is too simple an approach to bear fruit (i.e., construing teaching as democratic or autocratic, integrative or dominative, direct or indirect, teacher-centered or student-centered, etc.). In our effort to break out of this single construct thinking, we have worked toward the development of an interaction system which would better describe the complex phenomena associated with the teaching dialogue.

In this attempt we started with the distinctions first set forth by Bales' Interaction Process Analysis.[1] These have borne up well under systematic investigation, as suggested by Anderson.[2]

There are probably many variables of leadership and group life. Hemphill (1949), after analysis of some five hundred existing groups, arrived at sixteen descriptive variables. Factor analysis of Hemphill's variables (Gekoski, 1952), as well as seven factor analyses by Carter and Couch (1953), yield three dimensions which the present author likes to interpret as follows:

1. The Affective area. Includes degre of interpersonal warmth or coolness, tension or relaxation; degree of antagonism or solidarity. Opposes friendly pleasant exchange to hostility and constraint.

2. The Procedural area. Includes statement and control of agenda, control of communication, division of labor.

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*This paper is adapted from a more extensive report to the U.S. Office of Education entitled: The Analysis of Political Controversy: An Approach to Citizenship Education based on Cooperative Research Project No. 551.

[1]Robert F. Bales, Interaction Process Analysis (Cambridge, Mass.: Addison-Wesley Press, 1950).

[2]Richard C. Anderson, "Learning in Discussions: A Resume of the Authoritarian Democratic Studies," Harvard Educational Review, 31 (1959), p. 210.

Refers to amount of structure and degree of organization as opposed to degree of disorganization or looseness of structure.

3. The Task area. Includes quantity and quality of work done, units produced, ideas presented, solutions considered. Opposes solution reached, problem solved, high performance maintained to no solution, problem unsolved, poor performance. Productivity versus sterility.

We then analyzed the affective-procedural-task trichotomy into a larger number of more specific dimensions. These were selected on the basis of two criteria. First, they seemed logically related to the political controversy discussion model with which we were centrally concerned. And second, certain components of the discussion process have been used in other studies and been found to bear a relationship to student learning. Below is a brief statement of these dimensions of classroom discourse. We feel that they are, at best, minimally adequate as a conceptual model to handle the complex phenomena that occur in the teaching dialogue.

A set of dimensions for describing the act of teaching.

A. Cognitive or task dimensions.

(1) Statement posture[3] The term "statement posture" refers to whether the teacher or student is making a positive assertion, asking a question, questioning or challenging a statement made by another individual, or expressing self-doubt, either by questioning one's own statement or one's competence to make a statement. Statement posture was a major discriminating factor in Flander's work, and has obvious implications for describing important distinctions in teacher style.

(2) Discussion posture Individual statements generally reflect the speaker's attitude toward or way of handling information.

We have been concerned with two aspects of the teacher's approach to the content of a discussion. If he discusses the content as problematical with no definite "right" answers, we would term the discussion dialectical. If the teacher discusses the content, through either statements or questions, with the assumption that he is dealing with definitive truth, that is, certain knowledge which is either present or available, we would term the dialogue

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[3]The reader should understand that the terms used to denote these dimensions are arbitrary stipulative definitions.

(or, monologue, if in lecture form) as descriptive. Stated another way, while both descriptive and dialectical teaching may assume a problem or question before the class, the dialectical posture necessarily does. In the latter case, it is also assumed that the student has some degree of autonomy in the way he deals with the question or problem. In the pure sense of the dialectic, it is assumed that the outcome of discussion will not be the sum of the teacher's contribution, but a result of teacher-student interaction producing a product which cannot be wholly accounted for as coming from one or the other, or from a summing of the contributions of both.[4]

A second dimension of discussion posture, which may be applied in either a dialectical or descriptive situation, is the extent to which the discussion or problem under consideration is centered around the substantive issue described by a commonly agreed upon set of categories, as opposed to an analytic approach to the problem, in which an effort is made to explore new ways of looking at or structuring the nature and scope of the problem so that its substance can be more adequately handled. For example, a group might discuss whether the United States should support or withdraw from the United Nations. The argument might focus on whether or not UN actions are a beneficial extension of the United States foreign policy of collective security. At this point collective security might constitute the substantive issue under discussion. One member of the group might then suggest that the justification of the UN could be discussed in several contexts: (a) as a primitive instrument of world law which superceded the concept of "foreign policy;" (b) as a propaganda safety valve which allowed various governments to guage world opinion of the actions of individual states; (c) as a tool of foreign policy for individual nations. Although a statement such as this might broaden the context of discussion and suggest a more complex framework within which to deal with the isue it makes no judgment itself concerning whether or not the UN is a worthwhile institution. We call such statements analytic rather than substantive, since they do not focus on a suggested solution to the point under controversy, but rather on the conceptual context within which the point under controversy is to be handled.

In summary, then, we are suggesting two dimensions of discussion posture:

descriptive vs. dialectical;
substantive vs. analytic.

(3) Statement types. Another level of cognitive analysis concerns the specific type of statements used in classroom discus-

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[4] We would emphasize again that this analysis is meant to handle only the general domain of political controversy; it has not been developed to handle the analysis of teaching in subjects such as mathematics, science, and literature. But it might well be appropriate in these areas as well.

sion. Does the teacher, for example, give or ask for a high frequency of value judgments, or is he basically concerned with either giving or asking for factual claims about reality? Does he spend a great deal of time repeating and summarizing what has gone before in the discussion? If he requests value judgments from his students, are these requests directed at the level of general or specific value judgments? In our systematic analysis of classroom discussion we have, for example, differentiated the following statement types: general values, specific values, general legal claims, specific legal claims, factual generalizations, specific factual statements, sources of evidence, statements of clarification, statements of repetition, definitions, and analogies or "cases."

(4) Logical or intellectual operations. A fourth level of analysis deals with the logical or intellectual operations performed by the teacher or student as each attempts to break down or develop a policy decision. In general terms, some of these operations are: problem differentiation and focus (is the problem mainly ethical, factual, or definitional?), relevance testing (is a statement relevant to the discussion and to the particular problem presently being considered?), dialectical strategy (the use of specific instances to contradict more general statements, and the use of qualifying statements to cover these inconsistencies). Also the complexity of a cognitive episode should be kept in mind. An argument or "brief" might consist of two vaguely related statements (e.g., the United States should continue nuclear testing because you can't trust the Russions), or it might consist of a complex act of explicitly interrelated propositions.

Defining teacher style in terms of statement types and intellectual operations is a relatively new idea, and is undoubtedly of critical importance in the area of political controversy analysis, where both the efficiency of the teaching situation and learning outcomes of students may be defined with the same intellectual or logical concepts. The extent to which the teacher tends to be consistently concerned with the relevance of statements made in discussions; the extent to which he gives and demands evidence for claims; the extent to which the teacher chooses to treat analytic problems as arbitrary matters of convention by a rather free and easy use of stipulative definitions, or feels constrained to handle definitional problems within the network of existing meaning of words: These kinds of decisions on the part of the teacher may well be reflected in the way the student comes to handle similar problems, and thus may also be considered as evidence of student learning.

B. Social-emotional dimensions.

(1) Interpersonal affect. Another aspect of classroom behavior which must be taken into account in an adequate description of teacher behavior is interpersonal affect, i.e., the positive or negative feelings communicated in the interaction process. The dimension is so obvious and has been discussed frequently enough to requrie little explanation. We should point out, however, that

it is possible to discriminate at least two different types of affective expression:

support vs. antagonism; and
tension vs. tension release.

The behavioral cues for the first dimension require little explication. The most obvious example of behavior indicating tension release is laughter. Evidence of tension is, however, harder to infer from observable classroom behavior. It can, however, be operationally defined by such actions as pencil tapping, pacing the floor, and nervous laughter. Of course, it is assumed that tension underlies, and is the cause of the more boisterous laughter which is taken to be indicative of tension release.

C. Procedural dimensions.

Procedure refers to direct efforts to control the immediate interaction situation, e.g., giving directions for the conduct of a discussion, giving assignments, handling discipline problems. In our own work, the only procedural distinction we have drawn is between task-oriented procedural acts and those maily concerned with deviance control. For example, telling the student to take out his book would be task-oriented; telling the student to stop talking to his neighbor would be deviance control.

Even with the simple distinctions suggested here, the systematic analysis of the teaching act becomes a very complex business. Operationally, we can ask the following questions as we observe each statement in a discussion.

1. Is the act or (interact) a statement, a question, the questioning of another statement, or an expression of self doubt?

2. Is the act cognitive or procedural? If it is cognitive, we can ask a number of more specific questions:

a. Is the act descriptive or dialectical?

b. Is the act substantive or analytic with respect to the problem under consideration?

c. What type of statements are being made: value judgments, factual claims, definitional statements, clarifications, etc.?

d. What intellectual operations are in evidence: discriminating among statements with different degrees of relevance; generalizing from specific cases; specifying the meaning of a general statement; qualifying a general statement to take into account
inconsistency; etc.?

3. If the statement is procedural, is it simply to facilitate the completion of the task, or is it an attempt to control deviant behavior on the part of group members?

4. Are there observable affective overtones to the cognitive or procedural message? If so, are these overtones antagonistic or supportive? Is tension or tension release present?

A broader view of discussion style

Although we can dissect the dialogue into any number of appropriate dimensions, and identify teaching behavior along these dimensions, we recognize, at least intuitively, that there may well be certain general styles of teaching which are commonly observed. In dealing with the problem of describing these general styles, an important question arises: Which of the various dimensions set forth should be considered central, and which should be considered secondary in the definition of such styles? In determining the effectof a general style of teaching on learning outcomes, for example, is it more important that teachers be alike in the posture used, in the intellectual operations performed, in the amount and direction of affectivity shown, or in all three areas? Experimentally, there are at least two strategies one might use in answering this question. One might obtain a large sample of teachers, give them the same materials to teach, ask them to direct the class's attention toward the analysis and clarification of controversial political issues, observe the range and profiles of behavior that follow and relate these to learning outcomes. Or, one might define two or more particular styles of teaching along those dimensions of behavior that one felt were critical, train teachers to play the styles, observe to what extent the dimensions of teaching not included in the definition were also affected by the different styles, and again determine the relationship of behavioral dimensions to student learning. In the long run, we are saying that our ability to identify and differentiate teaching styles is justified by the kinds of predictions we can make about learning outcomes. No matter how different two teaching styles may appear to an observer, with or without the tools of systematic observation, they are "significantly different" from an educational standpoint only if they lead to different learning outcomes.

In our own work we have chosen the latter course: To define styles according to certain conceptual dimensions, train teachers to play these styles, and observe what differences occur, if any, in behavior as well as differences in the learning outcome of students. We might illustrate this approach by describing two style models we have investigated experimentally. We have called these styles "recitation" and "Socratic" teaching.

Recitation teaching. Probably the basic characteristics of recitation teaching is the teacher's attitude toward and control of knowledge. He provides through reading assignments--usually a text--and through his role in class discussions the correct information which the students are to know. The teacher expects the

student to respond when called upon to fill in the sequence of information which the teacher wishes to develop in class. This involves mainly relating personal experiences or repeating or paraphrasing what the teacher or a text has said, although it may require the use of some independent thought, such as reorganizing previously read material or applying it to a new situation. In essence, then, evidence of learning is contingent upon the extent to which the student can respond to questions regarding information given him by the teacher, either in class or through texts and other media.

Socratic teaching. Socratic teaching, as we have conceived it, is clearly adversarial. When the center of discussion is a controversial political topic--as in our work--Socratic teaching requries that the student do more than describe the controversy in the terms in which the teacher, or assigned materials, have presented it. Rather the Socratic teacher requires the student to take a position on the issue, state that position, and defend it. Here the emphasis is not only on knowledge provided by the teacher, as background for the discussion, but on the process by which the student arrives finally at a decision about the topic under consideration, on the careful consideration of alternative decisions, and on the utilization of analytic concepts and strategies, regardless of the position which is finally reached.

Describing general styles dimensionally

While these brief descriptions of the two styles suggest that we "know" what are, in fact, the differences between Socratic and recitation teaching, when one begins to perform as a teacher, the general descriptions very quickly prove themselves inadequate. It is this fact that has led us to the more microscopic dimensional analysis. We found we needed a more precise and reliable way of describing the teaching performance than casual recall based on anecdotal records. It should be clear, however, that the microscopic analysis does not replace the general style description. Theoretically, it will simply provide us with a more precise way of defining "natural" teaching styles.

To illustrate how these two levels of description are related, below we have defined some of the similarities and differences between socratic and recitation teaching according to the dimensional analysis given previously.

Statement posture. Recitation teaching is characterized by a high frequency of "stating" and "question asking," with less emphasis on "questioning" or "expressions of self-doubt." With its adversarial nature, Socratic teaching shows a much higher frequency in "questioning" responses.

Discussion posture. Recitation teaching tends to be descriptive; it is assumed that the truth of the situation is available and that one has only to present and clarify information or an analytic structure by which information can be organized. The attempt to push the student toward a personal decision in which

values are at stake is inappropriate for this style. The Socratic style is clearly dialectical. It assumes that the problem can be clarified only in an adversarial context in which various points of view can be presented and defended.

Both recitation and Socratic teaching may emphasize either substantive or analytic responses. The recitation teacher, however, will be concerned with the substance of the issue only insofar as he is interested in clarifying it and presenting the correct position. In the process of clarifying, he may well be analytic, asking that his students explain, "What are the possible ways one might look at this problem?" The concepts which the students apply to this analysis will be those given them by the teacher as correct. The recitation teacher will often avoid giving an answer to the substantive issue, feeling that here knowledge is not certain so he should only attempt to present his students with the knowledge and concepts which they should use in resolving the problem outside of the school. In using the Socratic style, on the other hand, the teacher focuses directly on the substantive issue and possible answers to it. From time to time, however, the Socratic teacher may depart from the dialectical posture and treat the problem analytically in order to facilitate conceptualization of the problem. The structure used for such an analysis by the Socratic teacher may have been taught in a descriptive manner, or if the teacher maintains a "pure" style throughout, will likely have evolved from a dialectical discussion of the proper framework for viewing controversial political issues.

Statement types. Recitation teaching involves mainly factual claims. The teacher tends to deal with descriptions of reality, rather than with the truth or goodness of these descriptions. The recitation teacher in maintaining the sequence of his lesson--to the extent that it is successfully programmed--tends to proceed by gradual, well-related steps, using a great many summarizing, repeating, and focusing statements. The Socratic teacher, on the other hand, in dealing wit political controversy, tends to ask for value judgments and to challenge them. Factual claims will deal mainly with the background to the issue and as support for value statements. There is also a sequential factor involved in Socratic teaching. It is likely to involve an emphasis on factual statements and questiosn as the discussion gets underway with the emphasis on value issues coming later. Recitation teaching, as far as we have been able to ascertain, does not reflect any sequential pattern.

Intellectual operations. Except for the fact that the Socratic teacher is engaged in an adversarial role, there is no reason to expect that Socratic teaching will evidence any different patterns of critical thought than will recitation teaching. The recitation teacher may question relevance, give or ask for evidence, or ask his students to qualify statements. However, our experience is that the Socratic teacher does use more of these operations dealing with political controversy. It is also likely that because the teacher and students are engaging in controversy

rather than talking about it, the intellectual episodes are more complex than in recitation teaching.

The procedural dimension. Procedurally, we have considered the teacher as the channelizer of a dialogue between him and the students, regardless of which of the two styles he is using. This, perhaps, points up our cognitive bias. It seems to us, however, that it is more fruitful to investigate procedural style differences within a limited context of general classroom procedures. If, for example, the teacher ordinarily withdraws to the back of the room to let students run the discussion, this is less a matter of style than general pedagogical methodology. The concept of style for us assumes a common curriculum, common objectives, and a common procedural context. Variations that occur with this much held constant, then, we would denote "style." The number of times a teacher is required to act procedurally to control deviance, for example, would be a matter of style.

The affective dimension. Theoretically, one may not link high or low affectivity with any particular style. In practice, the Socratic discussion tends to be highly charged with negative affect because of the open controversy on the cognitive level, which spills over into the affective domain.

Utility of a dimensional analysis of teacher or discussion style

We are suggesting here, as indicated by our previous discussion, that a dimensional analysis of teacher style might be useful in a number of ways. First, it allows us to define general teacher style more precisely. Instead of beginning with polar constructs such as student-centered--teacher-centered or democratic-autocratic, for example, and developing categories to differentiate the poles, we define a number of dimensions of teaching, and then proceed to identify the characteristics of a teacher whom one would judge to be "student-centered," "democratic," "truth-seeking," or "Socratic." Thus, we are not trapped with a conceptualization of teacher behavior that works with only limited types of teaching.

Second, it allows us to describe variations in teaching styles which may or may not significantly affect learning outcomes. Instead of setting up styles in terms of single dichotomies and defining these operationally with "good" and "bad" categories, we can attempt to identify commonly observed styles of teaching, and determine which elements in the style, when varied, will or will not affect learning outcomes. Thus we can develop an empirical approach to the evaluation of teacher style. In the Socratic style, for example, we can ask whether the affective overflow which occurs when the student feels a personal threat to his ideas is a necessary part of the style, or is a low affect Socratic just as effective? In other words, is it the logical performance of the teacher which makes the learning more or less effective (if it is), or is it the logical performance plus the affective charge injected into the discourse.

From a research point of view this methodological approach allows

us to investigate a number of interesting problems:

1. Is it possible for individual teachers to manipulate their behavior and play more than one style, or must we identify teachers who have natural styles we wish to investigate and compare?

2. If it is possible for teachers to manipulate their styles, and play more than one style, what are the variations that occur within a single style, and are there overlapping areas in which one style cannot be differentiated from another?

3. Assuming that students were subjected to two quite different teaching styles on a systematic basis over a sustained period of time, under what conditions would this difference result in any different learning outcomes?

4. What is the relative importance of the intellectual or other personal characteristics of students, the style of teaching, and the personality of the individual teacher in effecting learning outcomes?

5. Is it possible to develop an observational instrument to describe not only the general style factors of the teacher, but also sufficiently complex intellectual processes that occur in the classroom, so that it can be used to assess learning outcomes?

6. How difficult is it to train teachers to operate consistently from a particular teaching style, and are there personality factors which make certain teachers incapable of learning some styles of teaching?

In our own work we have focused mainly on the first five questions, and have simply sidestepped the last question by selecting teachers for our research who were sufficiently flexible to teach in a variety of ways. It should be noted, however, that most of the people who have taught for our experimental program could handle Socratic teaching with ease, and had more difficulty avoiding challenging the student's value position and initiating an adversarial dialogue. The problem of teacher training, therefore, would seem to be not only whether or not the teacher is sufficiently quickwitted and flexible to perform in a dialectical context, (the major problem of beginning teachers), but also whether or not he can tolerate giving doses of "truth" when they are called for. And the problem here may stem from basic temperamental differences among people, something professional educational programs can probably do little about. (Analagously, there may be temperamental as well as intellectual characteristics which cause some physicians to specialize in surgery and others to specialize in internal medicine.)

TABLE C-1

NORMS DATA FOR TEACHER AND STUDENT RESPONSES AS CATEGORIZED BY A CONTENT ANALYSIS SYSTEM FOR RECITATION AND SOCRATIC STYLES OF TEACHING

Response Categories	Teacher Behavior		Student Behavior	
	Rec.*	Soc.*	Rec.	Soc.
A. Statement Types				
General Value Judgment	.002	.019	.005	.021
General Legal Claim	.003	.010	.004	.018
Specific Factual Claim	.024	.040	.028	.023
Source	.010	.007	.006	.007
Definition	.023	.023	.016	.019
Clarification	.230	.173	.074	.061
Case	.006	.024	.002	.006
Relevance	.005	.008	.003	.004
Specific Value Judgment	.034	.134	.066	.204
Specific Legal Claim	.028	.034	.032	.062
Generalization	.078	.154	.214	.273
Repeat	.396	.239	.528	.281
Debate Strategy	.004	.005	.006	.023
Task: Procedural	.040	.024	.008	.010
Deviance Control	.006	.008	.001	.002
B. Social-Emotional Responses				
Affect: Positive	.124	.046	.000	.009
Affect: Negative	.044	.050	.004	--
Tensions**	.028	.046	--	--
Tension Release**	.021	.027	--	--
C. Statement Posture				
Questioning	.020	.023	.010	.014
D. Logical Operations				
Generalizing-Specifying	.005	.039	.026	.039
Consistency-Inconsistency	.032	.229	.010	.023
Qualification	.001	.002	.001	.005
E. Discussion Posture				
Dialectical	.046	.272	.003	.006
Analytical	.056	.033	.004	.006

*The recitation percentages are based on mean scores of a total of ten discussions for four different teachers; the socratic percentages are based on mean scores of a total of nine discussions for four different teachers.

**Tension and Tension release are classroom scores and were not divided here according to teacher or student.